invisible agencies. He thought we often overlooked the real mental suffering which savages endured from this dread of spirits. We were too apt to associate fear of this kind exclusively with the fanaticism and superstition of religions of more civilised nations. With the people of Guiana, therefore, this belief must exercise a very considerable influence upon their minds, and was calculated to overthrow their balance in some instances. The other point was the vivid reality of their dreams. This was a most curious fact; and he had little doubt that the same confusion—the same inability to distinguish between dreams and the actual occurrences of life happened with certain of the insane. It was not at all uncommon for lunatics to assert, in the most positive terms, that various things had befallen them in the night, that they had been assaulted, &c., and the foundation of these delusions was, he thought, often laid in vivid dreams, which to them were as real as they appeared to be with the Indians of Guiana. There was no reference in the paper to the insane in Guiana, and he should like to ask the author whether he had met with any, or with idiots. If so, were they regarded as possessed by evil spirits, or looked upon as the special favourites of heaven? There was one more point on which he should like to be informed. Was there no crime of witchcraft recognised in Guiana? Were not witches punished for their supposed malignant influences? So far as he had been able to gather from this paper, which was one of the most interesting he had ever listened to, the fears of the people were directed towards invisible powers only, and not to persons supposed to be in league with them.

Mr. R. W. Felkin observed that the author had mentioned that the Indians are in the habit of taking with them a lighted firebrand when leaving a camp at night, for the purpose of frightening away the spirits. He should like to ask him if there were any other practical object in so doing, such as lighting up the path, or as a mark that they belong to the camp. He asked this question because in his journey in Central Africa he had often seen this done by the natives. On enquiring why, he was told it was to frighten away the devil, but he found on further enquiring, that the custom arose from a rule, that a firebrand must be taken by anyone leaving the camp at night to show the watchman on his return that he belonged to the camp, and was neither an enemy nor a thief.

Professor Flower, Mr. A. L. Lewis, Mr. G. M. Atkinson, M. Bertin, and Mr. J. Park Harrison also joined in the discussion.

Mr. im Thurn, in answer to various questions addressed to him, stated that his study of animism had been but a part of the Indian social history, regarded as a whole, and that he had had some difficulty in confining the remarks just made by him strictly to animism. He was now asked whether he had found any traces of stone circles, of human sacrifice, of rock inscription, of magic, and so on. No doubt all these and many other matters were more or less directly connected with the religion of the Indians; but time

failing, he must refer his questioners to a series of papers dealing with all these matters which he had already placed in the hands of a printer. There was just one point on which he would like to make further remark. And that was that several of those who had spoken after his paper had referred to the terrible evil of the state of superstition in which the Indians were described as living. He wished to point out that there was also good in this superstition: that the fear in which the Indians lived of unwittingly offending the countless beings visible and invisible among which they felt themselves to be, kept them very strictly within their own rights and from offending against the rights of others.

On the Discovery *of* Chert Implements *in* Stratified Gravel *in the* Nile Valley *near* Thebes.

By Major-General Pitt Rivers, F.R.S., President Anthrop. Inst.

[With Plates XXVII to XXXVI.]

(A Paper read before the Institute on June 14, 1881.)

Having paid a hurried visit to Egypt in March of the present year (1881), my attention was naturally turned to the question relating to the occurrence of flint or chert implements in the Nile valley. The subject, as Anthropologists are aware, has been much discussed of late, and its importance arises from its special bearing on the antiquity of man. Our own journal has contributed its quota to the controversy, and the papers by Sir John Lubbock, Mr. Jukes Browne, Captain Burton, and others are well known to members of the Institute.

I will not ask the Institute to follow me in reviewing the history of this discussion, the materials for which are to be found in the papers I have alluded to, and many others by men of equal ability, a list of whose names would alone suffice to prove the great attention and research that have been brought to bear upon the subject.

Perhaps the present state of the question may be best summarised by quoting the opinion of Sir John Lubbock, one of the latest contributors to the archæology of the stone age in Egypt.

After carefully examining the various sites in which implements have been found on the surface in the Nile valley, and making a large collection of them, he came to the conclusion that their forms mostly resembled those of palæolithic implements found in Europe, and that they were probably pre-Egyptian. This, however, being an argument based upon resemblance of form only, cannot be considered conclusive, and Captain Burton, who followed Sir John in an examination of the sites

though favouring the same view, still leaves the question open so far as date is concerned. It is unnecessary to remind the Institute that the doubt in this matter arises from the known fact that the Egyptians used flint implements in embalming and for ceremonial purposes, and consequently it has been supposed by some, that when the *débris* of flint implement-making (*ateliers*) are found on the surface in the neighbourhood of tombs it indicates nothing more than the manufacture of flints for this object. The enormous number of these workshops might, however, be used as an argument against their having been employed for this purpose alone. Sir John observed that flint flakes were found only on the slopes of the hills above the level of the inundations, and that in the neighbourhood of the temples in the plains they were wanting. My own observation confirms this fact. I found few, if any, traces of the manufacture of flints around Karnac or Abydus, whilst they were abundant near Koorneh and Asyoot, at the foot of the Lybian range. But then the question might suggest itself:—If the flints were used for embalming, might not their presence above the line of the inundation arise from the position of the tombs which are all cut in the hill sides ?

Figs. 1, 2, and 3, Plate XXVIII, are illustrations of chert implements found by me on the slopes of the hills near Asyoot, in the vicinity of the tomb of Meri-ka-ra, a dignitary of the XIIIth Dynasty. Fig. 1 appears to be a kind of edged tool, sharp at the bottom and reduced to a tang at the top. Fig. 2 might be a hammer or an agricultural tool; it is also trimmed at the top for insertion into a handle or haft of some kind, Fig. 3 is a flake. The stone of the hill is limestone, and the chert flakes and tools which are found in the neighbourhood must have been imported from the interior. Such tools as are represented in the plate might have been used in excavating the tombs, but there is no proof of it ; they might equally have been brought to the place in pre-Egyptian times.

In the limestone of Asyoot, as well as the sandstone at Thebes, I ascertained by experiment that the hieroglyphics can be easily worked with flint. When first excavated, the limestone is easily cut with flint or chert, but it hardens by exposure. At Thebes, also, I picked up a piece of sandstone, which had fallen off the Temple of Koorneh, and a chert flake that was lying beside it, and with the latter I first squared the sides of the stone, then smoothed the face of it, and afterwards, taking the point of the same flint, I cut upon it a human head and shoulders which might almost be taken for an Egyptian original, completing the whole in about twenty minutes. Indeed, I believe that when properly hafted no better material could be employed for

the purpose than flint or chert which by fracture in use renews its own edge as work proceeds.

Of the use of metal in squaring the large blocks, there is abundant evidence on some of the Theban monuments. The marks of chisels about 0·8 inches (0·02 m.) in width, which from their uniform size could be of no other material than bronze or iron, can be traced all over the blocks. The successive blows of a hammer are shown by cuts succeeding each other at the distance of 0·4 inches (0·01 m.) from edge to edge, and some of these Mr. Campbell and myself traced underneath the paint or plaster on the columns at Medeenet Haboo. The plaster flaking off retained the casts of the chisel marks upon its under side. But it is remarkable that on the faces of the inscribed parts, and in the hieroglyphics, we could find no tool marks after lengthened search, and with the result of the experiment which I have mentioned fresh upon my mind, I came to the conclusion that the hieroglyphics might very possibly have been made by scraping with a flint, thereby meeting the views of those who believe with Mariette Bey, Mr. Chabas, and others, that flint may have been used by the Egyptians for certain purposes, but by no means negativing the opinion held by Sir John Lubbock and other prehistorians, that they belong more especially to prehistoric times. Indeed, the fact of their having been employed by the Egyptians for embalming and other purposes connected with the dead, lends confirmation to the view that they may have been so employed as survivals dating back to a time when no other material was known, mortuary customs being at all times and in all places those in which the reminiscense of bygone ages are most likely to be found.

When at Luxor I was taken by Mr. Campbell to a little knoll called Gebel Lahamare, about a mile north-east of Koorneh, where a large number of flakes are to be seen on the surface. They occupy the whole of the hill, and from the fact of the greater part of them being fractured or flaked by hand, I have little doubt that they must have been conveyed to this spot for the purpose.

It is remarkable that amongst the enormous number of flakes which cover the surface at this spot, we scarcely found one which had marks of secondary chipping, whilst on the raised plateau called Gebel Assart which lies between this and Koorneh, the surface, equally thickly strewed with flakes, was covered with flakes which had secondary chipping on their sides and edges. This shows a difference in the purpose of the manufacture in the two places, but in neither of them did I find a single perfect implement.

Fig. 4, Plate XXIX, a good example of a small tongue-shaped

palæolithic type, was found on the lower ground nearer the highest flood mark, and fig. 5, Plate XXIX, resembling somewhat a neolithic celt, was found in the waddy (A.B., Plate XXVII), to be hereafter mentioned. Fig. 6, Plate XXX, is a specimen of a hollow scraper used for rounding and planing the surface of wooden sticks or shafts,* and was the only worked tool I found at Gebel Lahamare. This form of tool I have before identified with palæolithic forms at the palæolithic station at Bois du Rocher, near Dinan, in Brittany. I there found a number of them of smaller size, the other forms at that station being invariably palæolithic. It will be seen by examining the two sides of this flint represented in A and B (fig. 6, Plate XXX), that on the side A, the facet which contains the concavity which has been used as a plane for round surfaces is quite smooth, whereas on the other side B, it is worked in innumerable chips and minute facets. This has doubtless been produced by use, the flint having been drawn along the stick from the side A to the side B, thereby producing facets on the side B only, and causing the bevelled edge represented at D in the section C.

Before quitting the subject of these surface flints I may allude to two remarkable objects in my collection the origin of which had considerable light thrown upon them by my visit to Thebes. I had for some years possessed two flint bracelets, which had attracted the attention of anthropologists on account of their excellent workmanship. These are represented, full size, in figs. 7 and 8, Plate XXXI. They were found in one of the tombs near Koorneh, but no further particulars respecting them had reached me. These objects being unique, so far as I know, and being undoubtedly genuine, it had always struck me as singular that so unsuitable a material as flint should have been employed for the purpose. The bracelets are entirely formed by chipping, no grinding or polishing being seen on any part of their surface. Amongst the flints which strewed the surface on Gebel Assart were a large number of round nodules, of which some specimens are represented, half size, in figs. 9, 10, 11, 12, and 13, Plate XXXII. They were evidently imported to this spot for flaking, and most of them were more or less chipped by the flint workers. They all consist of a central body surrounded by a ring of the same material. Mr. Newbold describes these bodies thus: "I may briefly notice," he says, "some singular silicious bodies that occasionally occur embedded in the marine limestone, and are particularly numerous in the limestone rocks of Thebes. They cover the *débris* at the foot of the cliffs in such profusion that they are termed by the Arabs 'nuktah,' or drops which they suppose to have been rained from heaven. They are also seen

* Evans's "Ancient Stone Implements," p. 287.

there *in situ* deposited conformably in a horizontal layer of whitish marl in the earthy white limestone which abounds in thin seams of crystallised gypsum, muriate of soda, and calc spar. These bodies usually assume the shape of spheroids encircled by a belt resembling the delineation of a planet with its belt (fig. 9, Plate XXXII). Two are sometimes connected together, whilst others assume various modifications of form. They have a thin whitish coating, and in the interior present a greyish or brownish chert (see fig. 12, Plate XXXII). Ehrenberg ("Edin. Phil. Journal," April, 1841), who lately examined these silicious spheroids, terms them ocellated stones, or *morpholites;* he found no traces of organic structure, and is of opinion that they are the result of crystalloidal or morpholitic force. Their structure does not present radiation from the centre nor any appreciable crystalline development in their parallel planes of formation founded on uniform laws, which frequently, perhaps always, parted from many axes of formation. In the curious structure of these bodies Ehrenberg discovered foreign bodies, small stones, fragments of granite, &c."

Thus far is the description given of them by Mr. Newbold and Ehrenberg; but what concerns more immediately the subject of my present communication is that when fractured along their broadest axes (fig. 12, Plate XXXII) the material is seen to be distributed in concentric rings encircling a centre differing from the remainder in colour only. The ring or belt surrounding the main body is often divided from it only by a thin partition; and sometimes the ring only is found, as seen in the semicircular portion of one represented in fig. 13, Plate XXXII. The material is identical with that of the bracelets in my possession, and it seems evident that the idea of forming a bracelet of them has been suggested by the form of the stones. By chipping out the central body or by using a flint from which the central body had disappeared through natural causes, the remaining ring might easily be chipped into the form of the bracelets represented in figs. 7 and 8, Plate XXXI, thus accounting for the existence of an abnormal structure, which, as anthropologists are aware, so rarely present itself in relics of a barbarous age.

Fig. 14, Plate XXXIII, is a remarkable specimen of a flint knife,* obtained from a tomb at Kom Ombos in the year 1874: it has probably been one of the flint knives used by the Egyptians in embalming the dead; it is 12·05 inch in length and 0·36 inch greatest thickness. As a specimen of flint chipping it is unequalled, being worked in long facets across the face of the blade.

* This knife and the flint bracelets were obtained by Mr. McCallum, the artist, from whose possession they passed into my collection.

So long, however, as the finds of palæolithic implements were confined to the surface, all conjectures respecting date, as Mariette Bey truly observes, are hypothetical; probabilities may be put forward again and again and may be refuted by probabilities equally cogent on the other side.

It is to stratified deposits of gravel or alluvium that we must look for evidence such as that which in Europe has satisfied anthropologists of the antiquity of the implements found in them. M. Arcelin is said by Sir John Lubbock to have stated that the deposit of worked flints on the sides of the valley at Abu-Mangar extend beneath the modern deposits of the Nile; but Sir John himself was unable to verify this observation. Mr. Jukes Browne found many flints on the surface of the plateau near Helwan, but not beneath the surface. Since this, however, Dr. Mook appears to have found them in alluvial deposits near this place, in association with the bones of zebra, camel, hyena, ostrich and other animals, which have since retreated further south.*

Upon the gravels of the Nile valley little appears to have been written. Mr. Leonard Horner, in his two papers in the "Philosophical Transactions," scarcely touches upon them, nor does Mr. Newbold treat upon them in any detail, and so far as I am aware any light that can be obtained as to their mode of deposition must be derived chiefly by analogy from other sources.

I have already said that the low plateau to the north-east of Koorneh, called Gebel Assart (see E, Plate XXVII), is covered with the *débris* of chert workshops. So thickly are these flints strewed upon the surface that the whole of the ground, when viewed from the little hill called Elwat-el-Deban, or the "Hill of Flies" (see D, Plate XXVII, and fig. 15, Plate XXXVI), appears to be distributed in brown patches where they occur, the chert fragments having assumed that colour by age. The soil beneath consists of indurated gravel composed of chert and limestone cemented together by carbonate of lime, and the whole deposit appears to have been washed down from the Bab-el-Molook, a tributary valley in which the tombs of the kings are situated, and to have spread out on the plain in a fan shape between the gorge of the valley and the Nile. Through this delta or fan of gravel a waddy (A.B., Plate XXVII, and fig. 15, Plate XXXIV) about 80 paces (61·0 metres) mean width, has cut its way to a lower level and now extends from the gorge of the valley to the margin of the highest Nile floods, passing through the fan for a

* Professor H. Haynes also found implements of palæolithic form near Thebes, but on the surface only

distance of nearly 2,000 paces (1,540·0 metres) and opening into the plain about 270 paces (207·0 metres) to the east of the Temple of Koorneh. The bottom of the waddy throughout this space slopes at a very slight angle of not more than half a degree, and the surface of the delta of gravel on each side has scarcely a greater angle, but seams of mud in the section on the sides of the waddy are seen to slope down at an angle varying from 2 to 2½ degrees towards the Nile, showing in all probability that the delta of gravel was formed gradually as it extended from the centre to the circumference. This appears to me the most rational way of accounting for the deposits in question, though it must be admitted that there are places in the valley where the gravel, when viewed from the Nile, appears to abut upon the precipitous sides of the range of hills in a way that would require a different interpretation, but the subject requires more time and detailed study than I was able to afford to it.

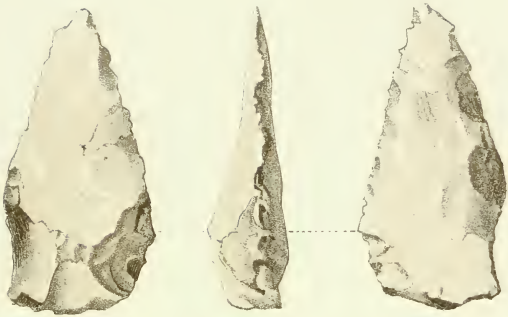
When viewed from the "Hill of Flies," the entire length of the waddy (A.B., Plate XXVII), as it passes through the gravel hills, is exposed to view, but it is noticed that the brown patches of chert which I have alluded to as occurring on the surface of the delta are not continued in the bottom of the waddy, which is seen as a white streak throughout its length. This proves that the flints on the surface of the delta were imported for fabrication at a prior date to the completion of the cutting of the waddy, for had they been imported subsequently, there is no ostensible reason why the flint-workers should not have occupied the bottom of the waddy also; nor, on the other hand, does it appear likely that the use of flint had entirely ceased when the waddy had reached its present depth, because flint flakes, though not so abundant as on the delta above, are found on the surface of the waddy. Fig. 5, Plate XXIX, which approaches most closely to a celt of the neolithic type, although its form does not necessarily prove it to be neolithic, was picked up by me in the waddy, and in one place I found a deposit of chert flakes which appeared to have been struck off on the spot.

It is certain, however, that in Egyptian times the waddy had reached its present dimensions, and that it has never changed materially since, for the sides rising at a more or less abrupt angle in places to a height of 9 feet to 19 feet (3 to 6 metres) have been cut into tombs, which consist of flat-topped chambers and galleries supported by square pillars of gravel, and the floors of which are in some instances nearly on the level of the bottom of the waddy. (See the section across the waddy, figs. 18 to 20, Plate XXXIV.)

The gravel had become so indurated at the time these tombs were cut as to form a conglomerate. The tops of the chambers

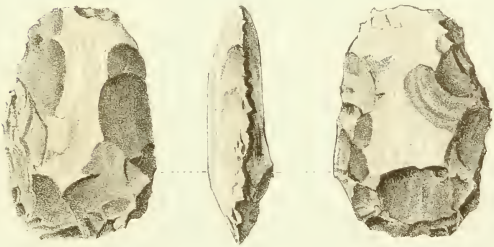
CHERT IMPLEMENTS FOUND ON THE SURFACE
NEAR THE TOMB OF MERICARA. ASYOOT
HALF SIZE.

Fig. 4.



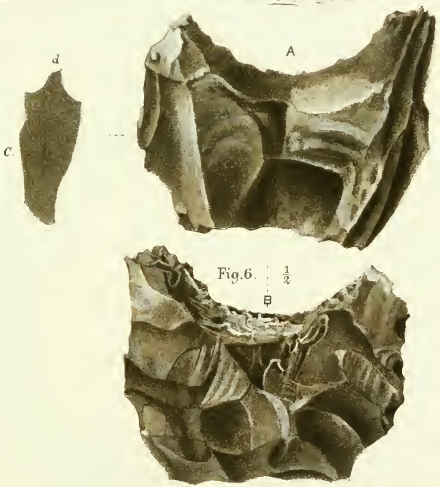
IMPLEMENT OF PALÆOLITHIC FORM
FOUND ON THE SURFACE NEAR KOORNEH. HALF SIZE.

Fig. 5.



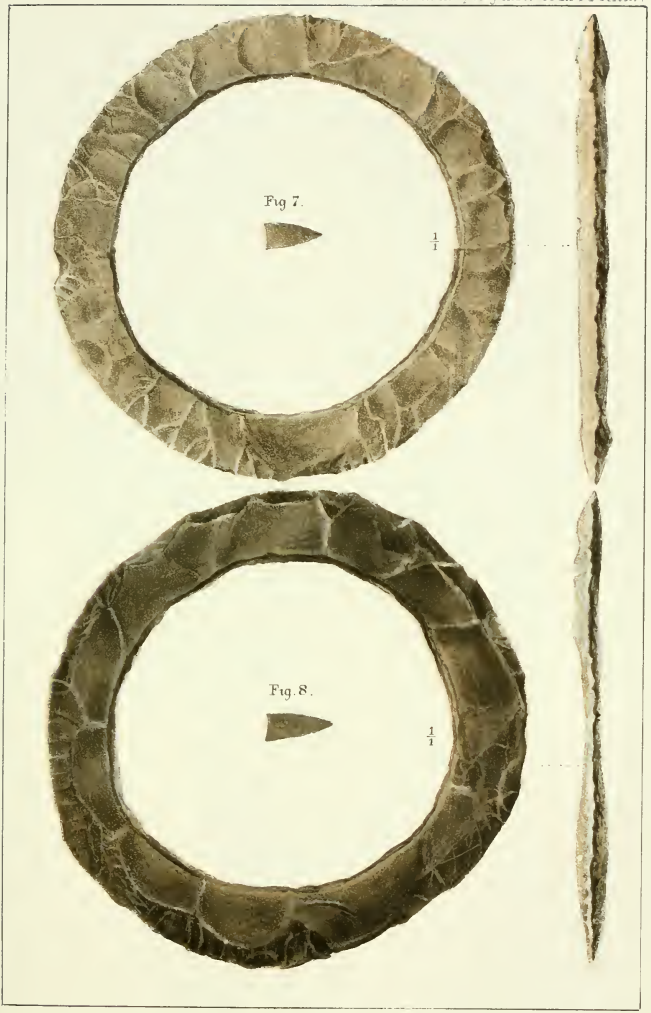
IMPLEMENT OF NEOLITHIC FORM
FOUND IN THE WADDI NEAR KOORNEH. HALF SIZE.

Fig. 27



Hanhart lith.

HOLLOW SCRAPER FOUND ON THE SURFACE AT GEBEL LAHA-MARE.
VIEW OF FAN IN LADAKH, INDIA



Hannart lith.

CHIPPED FLINT BRACELETS FOUND IN A TOMB
NEAR KOORNEH.
FULL SIZE.

Fig. 10

Fig. 9

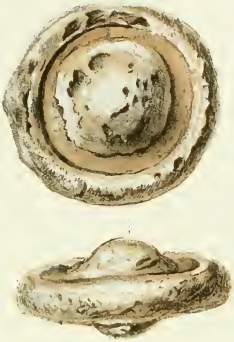


Fig 11.

Fig 12

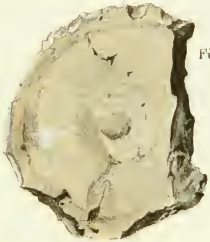
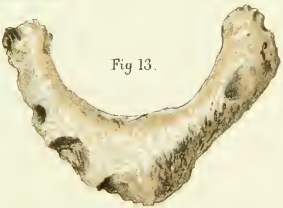


Fig 13.



Hanhart lith

MORPHOLITES FOUND ON THE SURFACE
NEAR GEBEL ASSART, THEBES.
HALF SIZE.

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Fig 14.

Hanhart lith

CHERT SACRIFICIAL KNIFE FOUND AT KOM OMBOS.
HALF SIZE.

are perfectly flat, and 14 feet (4·250 metres) square in some cases, and the pillars averaging 23 inches (0·6 metres) square have retained the sharpness of their edges to the present time, and in one of them a seam of mud is seen in the middle of the upright pillars, all having nearly the consistency of stone.

It was in this gravel that I commenced my search for flint flakes, on the 4th March, 1881, and as the discovery I am about to record is likely to be more widely known hereafter than the author of it, it seems proper that I should mention here that I had qualified myself for the search by previous investigations of the like kind. For some years I had made a particular study of river gravels. I had discovered palæolithic implements *in situ* in the drift gravel at Acton, the first which up to that time had been found in that part of the Thames valley, a record of which is in the "Quarterly Journal" of the Geological Society. I had also examined every section in which palæolithic implements had been found by others in England or on the Continent. Following the example of Dr. John Evans, F.R.S., to whom most prehistoric archæologists are indebted for their first lessons in the fabrication of flint implements, I had myself constructed flint implements many years ago, and had by that means acquired a thorough knowledge of the fracture of flint, a qualification of the first necessity to any one who proposes to examine a section of gravel for this purpose, because only a small portion of the sides of any flint is exposed to view in a section, and it requires the eye of an expert to distinguish from amongst the innumerable fragments of chert, of which a cherty gravel is composed, those which it is worth while excavating for the purpose of examination. Of the fragments thus unearthed for examination, only a small proportion even in the most productive site will be found to bear the recognised marks of human agency which constitute a flint flake, and which, as all prehistoric archæologists are aware, consists of a combination on the same flint of a bulb of percussion on the smooth face, one or more facets at the back caused by blows delivered in the same direction as that by which the bulb on the other face was produced, and on the top of the flake, contiguous to the bulb, the small residuum of the surface of the core from which the flake was made.

I had not long to look before several flakes such as I have described turned up in positions which proved unmistakably that they were constituent parts of the gravel. The section fig. 17, Plate XXXIV, here shows 3 feet 9 inches (1·15 metres) of gravel on the top composed of subangular and rounded chert and limestones, then 13 inches (0·33 metres) of hardened mud somewhat similar in colour to the Nile mud, but mixed with

occasional flints, and sloping at an angle of 2½ degrees towards the Nile, then gravel again of the same materials as before.

The flakes were found chiefly beneath the mud seam at distances of 6½ to 10 feet (2 to 3 metres) from the surface; they are of the ordinary kind, having bulbs of percussion and facets, drawings of which are given in figs. 22 to 26, Plates XXXV and XXXVI. Of the fact of their forming constituent portions of the gravel, none who saw them *in situ* could for a moment doubt; but in order to afford proof that the recognised marks of human agency were not derived from the blows of the Egyptian workmen in excavating the tombs, special care was taken to observe and record the position of the bulbs and facets as they lay in the gravel. Fig. 24, Plate XXXV, affords an example of this; this flake, which it will be seen has a bulb, two facets, and a piece of the surface of the core, was found in the evenly cut side of one of the tombs. The point of it (*a*, *a*, *a*, fig. 24, Plate XXXV) had been cut off flush with the side in forming the tomb, the thin section of it only appearing on the surface of the tomb as shown in the front and side view represented in fig. 21, Plate XXXIV.

In order to examine the position of the facets and bulb, the gravel was first chiselled away from beneath it, but it was so hard that it took two of us nearly ten minutes to excavate it. Having cleared the part below the flake it was then let down, when it was seen that the bulb on the smooth face and the two facets on the back had been formed by blows of a hammer which were delivered in a direction which was *inwards* as the flake lay, and must therefore have been formed before the flake was buried in the gravel. The same observations were made in the case of all the other flakes, seven of which were thus removed from the gravel on the first day. This was the 4th March.

Realising the importance of obtaining a competent witness to the position of these flints, I at once communicated the result to Mr. Campbell, F.G.S., who was stopping at Luxor. He accompanied me to the spot on the 6th, and satisfied himself upon the point by chiselling several flakes out of the gravel with his own hands; verifying the observation with respect to the position of the bulbs and facets as the flakes were removed from the matrix.

We then examined the sides of the waddy northwards to see how far the flakes could be found in the gravel in the direction of the opening of the gorge. Another, in this case an implement of palæolithic type (fig. 25, Plate XXXVI), was found 5 feet (1·6 metres) from the top as shown in the section (fig. 16, Plate XXXIV). The sides of the waddy were here nearly 14 feet (4·250) high, and the gravel was composed of the same materials as before.

This was about 400 paces (300·0 metres) from the margin of the delta, and about 500 paces (400·0 metres) from the mark of the highest Nile floods, so that the whole of the gravel between this and the Nile must have been formed during the period that flint was used in this place. Higher than this we could find no trace of implements, nor could any shells or bones be found; but I left Mr. Campbell at Luxor, and have reason to hope that his geological experience may be the means of throwing further light on this important part of the question; but the gravel, it will be observed, has nearly the consistency of stone, and to quarry it for the sole chance of finding bones would be a work of great time and labour. I was reluctantly compelled to leave this part of the subject to future explorers.

It now remains only to consider the value as evidence of the facts which have been adduced. Considering the action of carbonate of lime in cementing the particles of gravel together the circumstances of its being formed into a conglomerate need not in itself be taken to imply very great antiquity. Mr. Newbold observed in the calcareous cliffs skirting the Mediterranean between Alexandria and Aboukir, a bed, 1 foot thick, of bleached human bones derived from ancient Roman graves, which had been washed into their present position by drainage water running from the higher ground to the sea, and which were covered with a layer of gravel and sand varying from a few inches to 3 or 4 feet, which had been agglutinated together by carbonate of lime and ferruginous matter deposited by drainage water.

In other places in the Nile valley he also speaks of recent rocks formed in this way. But here at Thebes we have to deal with a mass of gravel extending 400 paces (300·0 metres) along the radius of the fan, and from 10 to 20 feet (3 to 6 metres) in thickness, all which has been deposited since flints were in use.

I have failed to ascertain the exact period of the tombs cut in this gravel in the sides of which the flint flakes were discovered. But within certain limits their date can be fixed. The fragments of pottery found in them have been submitted to Dr. Birch, who pronounces them to be not later than the XVIIIth Dynasty, and perhaps earlier. Five skulls found in them, the dimensions of which are given in the accompanying tables (Appendix A), are of the usual Egyptian type; the skulls are dolicho-cephalic; mean cephalic, index 750; nasal index, 513; orbital index, 872; alveolar index, 1,012; measured according to Professor Flower's method. The fragments of mummy cloth in which they were contained were found in the tombs; they show no trace of bitumen, the skulls being as

white as any prehistoric skull found in this country. That might either imply an early date, or that they belonged to the poorer class of Egyptians who did not use bitumen—probably the latter, as the graves of the richer class were usually excavated in the harder rocks.

The nearest tombs to the north-west, those of Drah-Aboo'l-Negga, are of the XIth Dynasty. The particular tombs which I am describing are not marked in the "Description de l'Egypte," published in 1809, but those situated nearer the second section are there marked Hypogée. Those now in question are given in the plates of Lepsius' great work, and are also marked in Sir Gardner Wilkinson's topography. Even supposing the tombs to be of the latest period assigned to them, viz., the XVIIIth Dynasty, this may carry us back as far as 3500 years from the present time, for the date of the excavation of the tombs.

But it is to considerations relating to the formation of the delta that we must look chiefly for determining approximately the age of the gravel. I am not aware that the Nile gravel has been carefully studied by any geologist. Probably Mr. Campbell can give the Institute more information upon this subject than any one else; but Mr. Drew, in the XXIXth vol. of the "Quarterly Journal" of the Geological Society, has described similar deposits in the valley of the Upper Indus. It appears to be generally admitted by geologists that the Nile has not cut its own channel in later times, but has followed a furrow made previously to the last rise of this district above the ocean. If so, we may discard from consideration all idea of gravel deposits left by the Nile on the sides of its valley as it worked its way down. We must suppose the gravel under consideration to have been brought down from the side valley before alluded to and spread out in a fan or delta similar to that described in Mr. Drew's paper at Pamzalan, Changchenmo, Ladakh, a drawing of which, extracted from his paper, is given at fig. 27, Plate XXX. It is there shown how the main river rising, or changing its course, has eaten into the edge of the fan and formed a cliff of greater or less height in it, and has then retreated. The water from the side valley still continuing to flow down towards the main river has then cut a lower channel back from the edge of the cliff to the gorge in the hills from which it descends. The main river still retreating has left an alluvial plain between it and the cliff which it had cut previously. The water from the side valley continuing to bring down sediment from the hills has then formed a second fan at a lower level than the first. Now we know that the bed of the Nile has both risen and changed its course since Roman times. According to Sir

Gardner Wilkinson the alluvium of the Nile at Thebes has risen 5 inches (0·127 metres) in 100 years. This would cause a rise of the highest level of the inundation of about 14 feet (4·250 metres) since the period of the XVIIIth Dynasty. It is possible, therefore, that the gravel under consideration may have extended further towards the Nile and may, in the same manner as the fan at Pamzalan described by Mr. Drew, have been cut into by the river; but I am bound to say I saw no evidence of this. The surfaces of the fans described by Mr. Drew slope at angles of 4·5 and 6 degrees, and the cliffs cut by the river are consequently much higher than here, where the slope of the surface of the delta is not more than 1 degree at most, and the gravel no higher than 20 feet (6 metres) anywhere. The gravel does not now reach within 60 yards (55·0 metres) of the highest mark of the inundation, and the ancient Egyptian tombs are cut quite to the end of the gravel, and even round the outside of it, if I remember rightly, in parts facing the Nile. If so, the gravel can never have reached further towards the Nile, or have been cut into by it. Mr. Drew in his paper refers to another cause which in the Upper Indus has been the means of cutting a lower channel through the fan, viz., that the side valley instead of remaining an accumulator has been converted into a denuder. Instead of bringing down gravel and sediment from the gorge which, being deposited on the surface of the fan, has caused the stream constantly to change its course and run at various times over the whole surface of it, the gorge has flown with water only, which finding its lowest level has run constantly over the fan in the same channel and has thus cut a trough through it from the gorge to the main river. I believe this to be the origin of the waddy near Koorneh. I believe also that the existing conditions of climate and rainfall are insufficient to account for the deposition of so large a mass of gravel as is found in this place. Not only has the valley ceased to bring down sediment in sufficient quantity, but even the water supply is not now enough to have cut the waddy through the fan. I was informed, only as a remarkable phenomenon, that the water had run ankle deep in the waddy six years ago for two days and a night. There is now a cemetery at the mouth of the waddy, and between it and the line of the inundation, which would have been buried beneath the gravel had any been deposited here since the graves were made. Horner speaks of rain in this part being now almost unknown, and Newbold says that but little rain falls in Central and Upper Egypt. Nevertheless, he describes valleys which have been widened, and others which have been altogether formed by aqueous causes, no longer in operation, and the surfaces of

these valleys, he says, are for the most part covered with drifted gravel composed not only of the detritus of rocks in the vicinity but of rolled pebbles of other formation transported from a great distance, for whose presence the action of existing streams is not adequate to account, as these pebbles often rest on ledges and hills much elevated above the general drainage level.

To what cause are we to attribute such an entire change in the process of denudation of the hills bordering the Nile? The main cause of disintegration, as Mr. Drew observes, when speaking of like changes in the Upper Indus, is frost. Have we then in the facts now recorded evidence of the presence of man in the Nile valley, living under conditions of climate that were totally different from what exists at the present time?

The accompanying tables (marked Appendix B and C) contain measurements of other skulls found in tombs near Thebes which I obtained from natives. The measurements are carefully taken according to both Professor Flower's and Mr. Busk's systems, and may be useful for comparative craniometry. The skulls appear to be homogeneous in character, and are probably of the true Egyptian race. When I obtained them they were covered with mummy cloths and bitumen: the nasal spine appeared in each case to have been removed in the process of embalming. These skulls have no special bearing on the objects of this paper.

APPENDIX D.

(Extracts from Letters written by J. F. Campbell, Esq., F.G.S.)

"Niddry Lodge, Kensington,

"My Dear General, "July 11, 1881.

"According to your wish, I send you extracts from letters which I wrote from Luxor, and which bear upon the discovery of worked flints in old gravel, on which stand some of the oldest Egyptian monuments.

'Luxor, January 15, 1881.

'I. Geologically, the Nile hollow is denuded out of a plateau, which is limestone, from here to Cairo. The beds are nearly horizontal all the way, and I have been at the base of the cliffs at many places. The cliffs are crumbling from the work of sunshine and air; expansion by day, contraction by night, caused by a daily range of 40° to 114° = 74°, and chemical decomposition of limestone in air. It rains here about once or twice in ten years, when a thunderstorm whirls water enough this way to make a heavy thunder plump. Then all the rain gathers into V-shaped 'waddies,' and a torrent sweeps the talus formed at the base of the cliffs down into the shape of a delta, into the Nile hollow. When the flood waters reach so far, they work on their side "deltas," wash them and spread them on the mud of Egypt, and wash mud and sand

MEASUR WHICH TOMBS THE CHERT IMPLEMENTS WERE
NE, 1881.

Number.	Greates		orius.	Other Measurements.				Remarks.
	Horizontal Circumference.	Length.	ius to. Alveolar point.	Least Frontal width.	Greatest width at Zygomatic Arches.	Width of Cheek Bones beneath outer margin of Orbits.	Depth of Chin from foot of Teeth.	
1	507	183	99	99	†	†	—	
2	499	179	97	104	†	†	—	
3	493	177	95	114	†		—	
4	509	182	104	102	†	†	—	
5	480	171	94	103	119	94	—	
Totals	2488	892	489	522	119	94	—	
Average	498	178	98	102	119	94	—	

RS, F.R.S., DECEMBER, 1881.

1	529	192	102	95	141	120	34	Nasal bones and chin prominent. Teeth slightly ground.
2	511	180	98	97	137	114	35	Nasal bones rather prominent, chin deep and prominent.
3	502	181	98	95	123	105	23	An aged person.
4	525	188	99	94	124	105	30	Nasal bones and chin slightly prominent.
5	525	190	98	92	117	100	30	Nasal bones very, and chin slightly, prominent. The teeth ground.
6	†	181	98	93	136	†	30	Skull fractured. An aged person. Cheek bones and chin very prominent.
7	522	189	99	99	129	103	33	Nasal bones and chin very prominent.
8	510	185	107	91	127	109	31	Nasal bones prominent, chin slightly so.
9	517	188	99	94	127	108	31	Nasal bones prominent, chin rather prominent, teeth ground.
10	498	182	99	93	130	109	29	Nasal bones prominent, chin rather prominent.
11	517	186	100	95	134	107	25	Nasal bones very prominent, chin prominent.
12	504	183	95	94	124	102	†	
13	523	187	100	93	131	100	†	Nasal bones very prominent, teeth ground.
Totals	6183	2412	1292	1225	1680	1282	331	
Average	513	186	99	94	129	107	30	

IT RIVERS, F.R.S., DECEMBER, 1881.

	486	17	99	90	123	101	—	Skull of a juvenile cutting right wisdom tooth, frontal and parietal sutures not closed. Rather prognatheus.
	520	18	95	97	128	107	—	This skull is remarkably brachycephalic, the cephalic index being 840. Out of 32 ancient Egyptian skulls described by Professor Flower in his Osteological Catalogue, Part I, "Man," only two reached 800, the highest being 807. Mr. Flower also records only one case in which the orbital index reaches 1,000, which is the index of this specimen.

is given in cubic centimetres.

down to the big Nile Delta Δ, and on into the Mediterranean. The cliffs are full of shells and flints. Those being harder and heavier remain; sorted in side deltas, and piled in heaps between the waterways. The hot sun and the sand storms, and the daily north wind work on the flints and wear them; and sculpture stones according to their relative hardness. I have agates worn by the sand blasts according to their hardness; and black flints polished by drifting white flint sand, which looks like beds of drifted snow on the hill sides.*

"Yesterday I went flint hunting with Mr. Meyer, who seems to know what he is about. We crossed to the west bank, the "left," and rode north past Gourneh Temple, and past several dry water-courses, including the waddy, which is "The Gate of Kings," *Bab el Maluk*. In the pyramidal mountain which makes the south side of that waddy are the tombs of the kings, which give a date to the latest phase of this sort of geology.

'The Temples which are older than B.C. 200, are scattered because of the work of the great earthquake, which ruined them. Some stand upon mud, some on gravel.

'Tombs in the flint gravel, and tombs dug out of the limestone, are dated some six to eight thousand years ago, by experts in Egyptology. It follows that the natural sculpture of the side cliff, and the high mounds of flint left, are old beyond my powers of calculation; but manifestly older by far than the oldest history read in the tombs. We passed over the low flint gravel, and found an infinity of broken flints, which looked quite fresh, and may be modern human work. Then we spread like a company of sharp-shooters and made for a black hillock. There the ground is old, and a pile of flints left between a couple of waterways. There also the flints have been broken, and there the fragments look old. Some of these flints weather white, some black; and many of the flint flakes are weathered like the unbroken stones. I have no doubt that these are very old works of human art. We loaded our Arab guide with select samples, and we might have loaded carts and camels with flint flakes. But we did not find a single worked weapon: a barbed arrow or a spear-head, or anything neolithic. Flakes and flints from which flakes had been struck off, we did find in great abundance; and manifestly of very great age. I fancied that I could make out high water levels sweeping round the base of the mounds of flints, the remains of the crumbled cliffs, which now bound the Nile hollow, and may have bounded an arm of the sea before the history of Egypt, and Egypt itself began to be.† So far this relates to the ground over which we travelled together; and to worked flints strewn upon the surface, which abound in Egypt.'

* These sand-drifts are conspicuous all the way to Aden, on both sides of the Red Sea; and so far as I have seen on both sides of the Nile hollow.

† I have often looked for sea margins, but I have never been able to satisfy myself of their existence in Egypt and along the Red Sea.

Luxor, March 7, 1881.

. . . . 'II. Yesterday will probably make a paper for the learned Societies, on flints, &c., so I may as well write my private paper to you for comparison, without consultation with General Pitt Rivers.' (The letter repeats in substance, with diagrams, the view taken of the superficial geology of the Nile hollow).

'Any delta at the end of any Scotch glen serves to show the growth of deltas all over the world. I have been pouring water on Nile mud, and so digging water furrows, and watching deltas grow out of the furrows here. . . . . A furrow having been made by a rain storm, the waters collected in the furrow shoot out the stuff at a lower level. The oldest stuff is the lowest, the newest stuff is shot over the oldest, and when a mound has grown big enough, stuff is shot right and left. The present condition of the fan-shaped combined deltas of the side furrows carved in the Nile cliffs, is that water streams shot right and left Δ, cutting furrows in the old gravel. The limestone at the hill tops 1,400 and 1,500 feet above the Nile, and down to the bottom of the furrows crumbles to the touch. I have often picked out flint fossils with my fingers . . . Where a stream has cut a section through the gravel, the structure of it tells the story of the birth and growth of a delta . . . Time and lime have cemented this Egyptian delta formation into a sort of breccia which needs hard hammering to break it up. It extends from Assouan to Cairo. The temple at Gourneh stands upon it. Till yesterday I had not realised that the "Gate of Kings," has rows of tombs of each side for miles. I crossed this "street," at the level of the present bed of the streams which flowed last time many years ago. Right and left for a very long way tombs are driven horizontally into gravel cliffs cemented by lime water into the seeming of an old conglomerate. These tombs are cut like a coal gallery in a mine, and stand open like a row of doors in a street, divided by square pillars. Above this street of tombs are deep pits, sunk into hard gravel, old tombs now opened by Arabs and others.

. . These upper streets, peopled by mummies, extend up to the first limestone cliff. The cliff face has been smoothed and plastered and painted, and long squared passages are driven horizontally into the limestone. These doors stand open now, and rows of them extend up to near the top of the ridge, 1,400 feet. "The mountain in the west where Thoth abides," now called Djebel Asas, was the mausoleum in which Egyptians shelved the dead people of Thebes. There is no sort of question about the antiquity of temples and tombs in which inscriptions tell the story: 1500 B.C. the shape of the street of tombs was much the same as it is now. The delta of this waddy had been built and cemented, and a late direction had been given by it to running water, which caused the water to undercut the hard gravel and make cliffs, before the tomb, however, drove their galleries into the gravel. "If you, with your knowledge and authority, can find anything of human work in that hard gravel," said I to P. Rivers, "you will find something beyond calculation older than these Egyptian

temples and tombs." He went back, and he found worked flints in the hard gravel.

'Yesterday we went together. We sought in the walls of hewn tombs for ends of flints. When our authority pronounced favourably of the appearance of an end, James (my servant) and I hammered and worked about it, till it was got out. Many were rejected, many were selected, one had been cut off in hewing the tomb. It came out a finished "flake," with the bulb of percussion far inside in the hard gravel. I am witness to the find and its place. It is a work of human art according to a good judge.

'It belongs to the geological delta formation, and beyond question it is older beyond calculation than the tomb which was cut into the gravel, and cut through the end of this particular flint flake. We got more, and they are being marked for the famous collection at South Kensington.

* * * * *

'This is my story of yesterday's work, which may yet live in history as a date from which to calculate the antiquity of man.'

"These extracts may serve to confirm the statements made, and the explanations given in the paper which I heard read.

"My own work at Luxor was about sunshine, and experiments on light. I paid a visit to the dwellers in the Gourneh tombs, to Mohammed and his family, who guided Mr. Meyer first, and me afterwards, and I sketched some of them at work on the modern antiques, which they carve with great skill. They live in tombs. I sought in their hewn gravel walls for flint flakes, with my servant; but we were not fortunate enough to find any that time. It needs a skilled hunter, and patience, and time to unearth these buried works of human art. Now that this find has been made by a skilled authority, I have no doubt that works of men's hands will be found abundantly underlying the oldest history in the world; in the hard gravel which underlies the mud of the Nile hollow, from Cairo to Assouan.

"I am, yours very truly,

"J. F. Campbell, F.G.S.

"To General Pitt Rivers, F.R.S."

Description of Plates XXVII to XXXVI.

Plate XXVII.

Plan of Thebes, showing the position in which the flints were found. A.B.—El Waddi (*see* also the section fig. 15, Plate XXXIV). C—the tombs in the side of the waddy near which the flints were found. D—Elwat-el-Deban or the "Hill of Flies." E—Gebel Assart.

PLATE XXVIII.

Implements of chert found on the surface near the tomb of Meri-Ka-Ra, Asyoot—

Fig. 1. A kind of celt, at the lower end, and narrowed to a tang at the top for insertion into a handle.

Fig. 2. A kind of maul, similarly constructed at the top.

Fig. 3. A flake. All half size.

PLATE XXIX.

Fig. 4. Chert implements of palæolithic form. Found near the highest flood mark below Gebel Assart (three views).

Fig. 5. Chert implement resembling neolithic form. Chipped; found in the bottom of El Waddi (three views). All half size.

PLATE XXX.

Fig. 6. A hollow scraper for planing round surfaces (three views, half size). A—the side towards which the implement was drawn in planing. B—the other side. C—the section. Found on the surface at Gebel Lahamare.

Fig. 27. View showing the formation of a fan in Ladakh. Extracted from Mr. Drew's paper in the "Quarterly Journal" of the Geological Society of London, vol. xxix.

PLATE XXXI.

Figs. 7 and 8. Drawing of two chert bracelets; found in tombs near Koorneh. Full size.

PLATE XXXII.

Figs. 9 to 13. Specimens of chert morpholites, from which the bracelets are believed to have been formed.

Fig. 9. A perfect specimen (two views).

Figs. 10 and 11. Two, chipped by the flint workers.

Fig. 12. One split in half, showing the concentric rings in the interior.

Fig. 13. Half a ring from which the central spheroid has been detached. All half size.

PLATE XXXIII.

Fig. 14. A remarkable specimen of a chert knife, found near Kom-Ombos. Supposed to be a sacrificial knife. (Two views.) Half size.

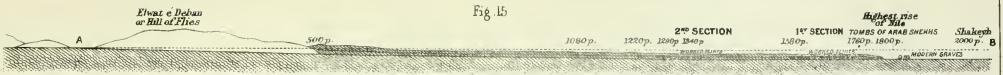
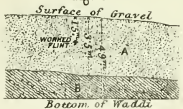


Fig. 15

SECTION ALONG THE LENGTH OF EL WADDI, SHOWING THE POSITION OF THE TOMBS AND WORKED FLINTS.

Fig. 16.



2ND SECTION.

A. Waterworn gravel of flints, mud and limestones; stones 4 to 6 inches across, subangular and rounded.

B. Ochreous sediment with occasional flints and limestones.

Fig. 17

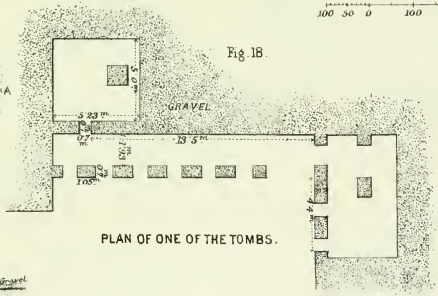
1ST SECTION.

A. Seam of mud.
B. Tombs.
C. Gravel.
+ Position of flints.

Scale of paces for Fig. 15.

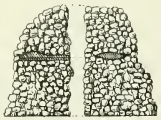
100 50 0 100 200 300 400 500

Fig. 18.



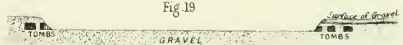
PLAN OF ONE OF THE TOMBS.

Fig. 21.



POSITION OF FLAKE IN SIDE OF TOMB.

Fig. 19



SECTION ACROSS WADDI AT 1ST SECTION.

10 5 0 10 20 30 40 50 60 paces

Scale of metres for Figs. 16, 17, 18 & 20.

1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Fig. 20.

ELEVATION OF ONE OF THE TOMBS.

PLANS AND SECTIONS AT EL WADDI, SHOWING THE POSITION OF THE IMPLEMENTS.

Journ. Anthropolog. Inst. Vol. XI. Pl. XXXIV

J. P. & W. REMBLIE, LITH

Fig 22

Fig. 23.

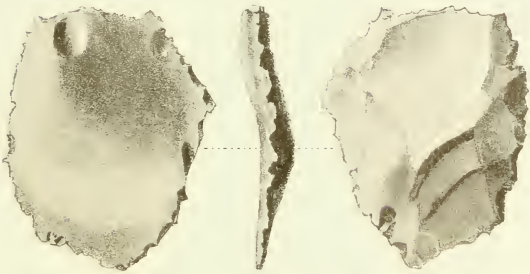
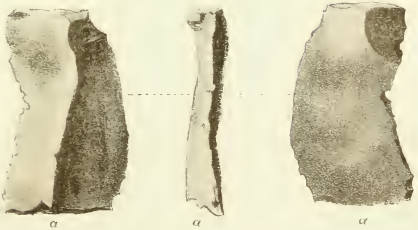


Fig 24.



CHERT FLAKES FOUND IN THE GRAVEL
AT THE SIDES OF EL WADDI.

Fig 25

FOUND 1·6M. BENEATH SURFACE IN GRAVEL
IN WHICH TOMBS WERE CUT. EL WADDI, KOORNEH.
HALF SIZE.

Fig. 26.

FOUND IN TALUS OF GRAVEL IN WHICH TOMBS WERE CUT
EAST OF TEMPLE OF KOORNEH.
HALF SIZE

PLATE XXXIV.

Fig. 15. Section along El Waddi; see A.B. on the map of Thebes (Plate XXVII), showing the positions of the tombs and the positions in which the chert implements were found.

Figs. 16 and 17. Two portions of the above section enlarged, showing the position of the seam of mud in the gravel, and of the flakes and tombs.

Figs. 18 and 20. Plan and elevation of one of the tombs in the side of El Waddi.

Fig. 19. Section across El Waddi showing the position of the tombs.

Fig. 21. Two views showing the position of a flake in the gravel on the side of one of the tombs, and the position of the bulb of percussion.

PLATES XXXV AND XXXVI.

Figs. 22 to 26. Flakes and one implement found in the gravel on the sides of the waddy in which the tombs were cut.

Figs. 22, 23, and 26. Two flakes and one core found in Section 1, fig. 17, Plate XXXIV.

Fig. 24. A flake, the position of which is represented in Fig. 21, Plate XXXIV.

Fig. 25. Implement found in Section 2, fig. 16, Plate XXXIV. All half size.

DISCUSSION.

Professor BOYD DAWKINS remarked that while General Pitt Rivers was working out the palæolithic deposits near Thebes, it was his good fortune to study at Boston a collection of palæolithic implements from the same place, made by Professor H. W. Haynes, in 1878, and shown at the Paris Exhibition in that year. Some of the hâches discovered at Bab-el-Moluk, the Tomb of the Kings, at Luxor, were of the types Acheulien, and Mousterien of Mortillet. There were also lance-heads and scrapers. The importance of General Pitt Rivers' explorations consists in the fact that they prove that these palæolithic implements are contemporaneous with the gravel in which some of the tombs are hollowed.

It is not a little strange that the implements of the river-drift then should be of exactly the same types, wherever they have hitherto been discovered. It may be inferred from their identity that the palæolithic man who hunted the arnee and the extinct hippopotami in the forests of India, who wandered over Palestine

and the valley of the Nile, who hunted the wild-boar and stag, the mammoth, and possibly the pigmy hippopotamus in the Mediterranean region, was in the same rude stage of civilisation as the hunter of the reindeer, bison, woolly rhinoceros, and horse in the forests of France and Britain. Here we are face to face with a condition of primeval savagery formerly universal.

NOVEMBER 22ND, 1881.

HYDE CLARKE, Esq., *Vice-President, in the Chair.*

The Minutes of the last meeting were read and confirmed.

The following presents were announced, and the thanks of the meeting voted to the respective donors :—

FOR THE LIBRARY.

From Sir JOHN LUBBOCK, Bart., F.R.S.—A collection of pamphlets, by various authors, bearing upon Anthropological Subjects.

From LUCIEN CARR, Esq.—Report of the United States Geographical Surveys west of the 100th Meridian. Extract from Part 1, Vol. VII, Archæology.

From Dr. HOFFMAN.—The Gesture Speech of Man. By Colonel Garrick Mallery.

From the AUTHOR.—Corrigenda and Explanations of the Text of Shakespere. By George Gould.

—— Notes sur l'archéologie préhistorique en Portugal. By Em. Cartailhac.

—— Die statistischen Erhebungen über die Farbe der Augen, der Haare und der Haut in den Schulen der Schweiz. By Professor Dr. Kollmann.

—— On the so-called Chukchi and Namollo people of Eastern Siberia. By W. H. Dall.

From the STATE BOARD OF HEALTH OF MASSACHUSETTS.—Second Annual Report, 1880. Supplement containing Report and Papers on Public Health.

—— Thirty-ninth Report to the Legislature of Massachusetts relating to the Registry and Return of Births, Marriages, and Deaths in the Commonwealth. For the year ending December 31, 1880.

From the INSTITUTION.—Journal of the Royal Institution of Cornwall, Part 1, Vol. VII.

From the Institute.—Catalogue of the Library of the Royal Colonial Institute, October, 1881.
From the Society.—Proceedings of the Birmingham Philosophical Society, Vol. II, Part 2.
—— Journal of the Society of Arts, Nos. 1512, 1513.
—— Journal of the Asiatic Society of Bengal, Vol. L, No. 243.
—— Journal and Proceedings of the Royal Society of New South Wales, 1880.
—— Bulletin de la Société Impériale des Naturalistes de Moscou, 1881, No. 1.
—— Zwanzigster Bericht der Oberhessischen Gesellschaft für Natur-und Heilkunde.
From the Editor.—"Nature," Nos. 627–629.
—— Revue Scientifique. T. XXVIII. Nos. 20, 21.

The election of C. Pfoundes, Esq., was announced.

The following paper was read by the author :—

Notes on the Asiatic Relations *of* Polynesian Culture.

By Edward B. Tylor, D.C.L., F.R.S., V.P.A.I.

The following informal remarks are made with the view of bringing some lately noticed facts to bear on the problem of tracing certain drifts of culture, which appear to have been going on for ages, from the interior of Asia over the south-east or Indo-Chinese region and the Indian Archipelago, and thence into the island groups of Melanesia and Polynesia, even touching points of Australia. Of late years several papers on this subject have appeared in the "Journal of the Anthropological Institute," among them Colonel Yule's tracing of Asiatic customs into the Indian Archipelago, and Mr. Keane's account of recent researches on the Khmer language of Cambodia as related to the Oceanic tongues.

The author of the present remarks has mentioned the spread of Asiatic games over the Oceanic islands, and the wide acceptance there of the cosmic-theological doctrine of the world being divided into upper and lower stages, seven or more in number, an idea which seems plainly a broken-down remnant of the Brahmanic and Buddhistic doctrine of series of successive heavens and hells, itself apparently the outcome of the theory of concentric planet-spheres, known to the Pythagorean philosophy, and seemingly traceable to yet older Babylonian astronomical ideas, to which the seven-staged temple of the seven planets at Birs-Nimrud still bears witness. The theory of the Asiatic drifts of culture over the Pacific having now a

substantial basis, it is desirable to call attention from time to time to points likely to affect it.

Mr. Carl Bock's lately published "Head Hunters of Borneo," gives a clearer idea than heretofore of the civilisation of the Dayaks, as holding an intermediate place between the Hindu civilisation, which has acted on them both in its Brahmanic and Buddhistic form, and the lower culture of the South Sea Islands. Had this traveller taken his ideas of Dayak architecture only from their village-houses, he would have underrated the traditions of ornamental design and artistic skill which he discovered when allowed to visit and sketch the secluded burial-houses of the royal families, structures on posts, adorned with animal carvings and wooden sculpture of remarkable lightness and beauty, the carved roof-projections somewhat reminding us of Cambodia and Siam. To those who have examined such types of architecture in the Malay Archipelago, it cannot seem probable that Polynesian architectural design, such as is seen in New Zealand, was the result of merely native development, but rather that it involves inherited, though broken-down traditions of Asiatic art. Attempts thus to connect Polynesia with Asia have not yet been carried far in detail, except perhaps in tracing the dwellings supported on posts or piles from such Asiatic districts as Asam far away into the ocean islands, and in General Pitt Rivers' identification of the Buddhist loop-coil ornament with a similar pattern used in New Guinea and New Zealand.

It seems worth notice that one of the Dayak musical instruments figured by Mr. Bock lies in an instructive way on the supposed line of drift of civilisation. This is the nose-flute (*op. cit.*, Plate XIX, fig. 2) a specimen of which from his collection has come to the British Museum. There is a drawing in Williams and Calvert's "Fiji and Fijians," p. 163, which shows a native girl performing on this instrument with the right nostril, while she stops the other with the thumb. In the Polynesian Islands, from the time of Cook's voyages, there are several mentions of the nose-flute. Ellis's account of the *vivo* of the Society Islands ("Polynesian Researches," Vol. i, p. 197) describes its being played much after the Fijian manner, but usually with the left nostril, and it is an instance of the slight variations of custom which establish themselves as fashions, that Mariner's "Tonga Islands," Vol. ii, p. 332, describes the *fango fango* as always filled by the right nostril. The instrument is commended by travellers for its soft plaintive tones, which often served as an accompaniment to singing. It may be traced as far as New Zealand (*see* Williams, "New Zealand Dictionary," s. v. *Kōauau*). In Waitz, Vol. vi, p. 752, it is